Chapter 3.1 WATER QUALITY ASSESSMENT SUMMARY

Virginia has nine major river basins with an estimated 50,357 miles of perennial rivers and streams and approximately 2,428 square miles of estuaries. These figures were calculated utilizing the Environmental Protection Agency (EPA) National Hydrography Database (NHD). This new and improved hydrography database has provided additional geographical refinement of rivers, streams, lakes and estuarine waters in Virginia. This is the reason that the overall stream mileage in the state has slightly increased from previous reported stream mileage calculation.

The overall water quality for Virginia is assessed based on whether or not the condition of the waterbody being assessed permits citizens to safely enjoy the designated uses of the waters as described in the Virginia Water Quality Standards. Table 3.1-1 briefly describes the designated uses and the baseline criteria used in this assessment to demonstrate support of the designated uses.

Table 3.1-1 DESIGNATED USE MATRIX

NO.	DESIGNATED USE	SUPPORT OF USE DEMONSTRATED BY
1	Aquatic Life Use	Conventional Pollutants (Dissolved Oxygen, pH, Temp.); Toxic contaminants in water column; Nutrients and toxic contaminants found in sediments; Biological evaluation.
2	Fish Consumption Use	Advisories, limiting consumption, or restrictions issued by Virginia Department of Health (VDH); Comparison of fish tissue data to state screening values for toxic pollutants found in Tables 6(a) and 6(b) of the Water Quality Assessment Guidance Manual
3	Shellfish Consumption Use	Restrictive actions for harvesting and marketing of shellfish resources made by the VDH Div. of Shellfish Sanitation.
4	Swimming Use	Conventional Pollutants, (Fecal Coliform, E. Coli and/or enterococci); beach advisories/closures issued by VDH
5	Public Water Supply Use	Closures or advisories by VDH; comparison of data to applicable public water supply standards
6	Wildlife Use	Aquatic life toxics criteria in water column

The assessment begins by analyzing all quality assurance/quality control (QA/QC) approved data from DEQ ambient water quality, biological, sediment and fish tissue monitoring, other special studies and/or other non-DEQ water quality data, including citizen monitoring data, for the 5-year assessment period. Citizen monitoring data is evaluated for use in the assessment using a process outlined in Part VI, Section 6.3.1 of the 2006 Assessment Guidance Manual. The results of these comprehensive data analyses are compared to both numeric and narrative criteria related to the designated uses contained in the Water Quality Standards (WQS). The WQS are provisions of State and/or Federal regulations that contain numeric and/or narrative criteria for protecting the designated uses of all waters in the Commonwealth.

In performing the assessment of chemical data summarized in this report, DEQ used the Percent Method with a slight modification for small datasets. For additional information on the methodologies used in the assessment, see Chapter 2.2 of this report or the 2006 Water Quality Assessment Guidance Manual found on the DEQ website at http://www.deq.virginia.gov/wqa/.

Many aspects of this assessment process are the same as previous assessments, but several changes or enhancements have been implemented for this reporting period which are different from previous assessments. First and foremost, the overall assessment of water quality, once again, incorporates a five-year period (January 1, 2000 to December 31, 2004). Earlier assessments had been based on a two-year period which made it very difficult to accurately assess water quality because the number of sampling data points available was limited. By going to a five-year assessment period, more data points are available and a better analysis of the data can be performed.

As in 2004, the 2006 fish tissue assessment has assessed two or more exceedences of the same toxic criterion based tissue value (TV) at a site as impaired since the TV's are directly calculated from the "human health" Water Quality Criteria for

Surface Waters (9 VAC 25-260-140). For additional information regarding fish tissue assessment, see Section 6.5.2 of the 2006 Water Quality Assessment Guidance Manual.

In addition to the previously described enhancements, revisions to the 305(b)/303(d) guidance manual have enhanced assessment quality and consistency among DEQ offices and programs. Additionally, the guidance manual provides the public an opportunity to review and comment on the assessment criteria used to determine designated use attainment. The draft manual was public noticed in August 2005 and DEQ received comments on the updated draft manual. Additional revisions were made to the guidance manual based on comments received. DEQ released the final 2006 Guidance Manual, in December 2005.

If a chemical, biological or tidal waters data package cannot be used directly in the assessment process due to QA/QC concerns or other methodology inconsistencies, the appropriate DEQ staff will provide the data generator an explanation for the data not being useable. A list of all data providers and the status of the QA/QC review is included in Appendix D of the 2006 Integrated Report.

Statewide summaries of the river miles, estuarine square miles, and lake/reservoir acres within and/or bordering Virginia are presented in Tables 3.1-2 through 3.1-4. Support of the overall uses for each waterbody was determined by examining the support of up to six designated uses (see Table 3.1-5), as appropriate, for each waterbody.

As in previous 305(b) assessment reports, conventional pollutant data (DO, pH, temperature, bacteria and nutrients) continued to make up the bulk of the data used. Conventional pollutant data were collected and assessed from DEQ monitoring stations along with QA/QC approved monitoring data from other federal, state, municipal and citizen monitoring programs and compared to Virginia's Water Quality Standards. DEQ used the percentage procedure to determine the degree of use support for conventional pollutant data.

The assessment is objective except where professional judgement indicates that natural causes are responsible for the violations (or the data quality is suspect). For the 2006 assessment cycle, Virginia used the trophic state index (TSI) to determine if natural conditions relative to lakes/reservoirs were responsible for natural dissolved oxygen (DO) impairments due to stratification. Waters not meeting the DO standards in bottom waters due to natural stratification and not excess nutrients are listed as naturally impaired (Category 4C). These waters will not be considered for TMDL development at this time but will need to be assessed against the lakes nutrient Standards when these new Standards are adopted by the State Water Control Board (SWCB). For DO, the instantaneous minimum standard found, in 9 VAC 25-260-50 (see Table 2.1-1), was used to assess compliance. A description of the types of data and the acceptable criteria used to determine the proper degree of use support result for each water type is described in Chapter 2.2 of this report. It should be noted that a single Category or Subcategory is assigned to each segment or assessment unit. Since each assessment unit has multiple designated uses, the worst case Category (Category 5) for any designated use will override all other Categories for that segment.

Table 3.1-5 provides an overall summary of all waters assessed for each of the designated uses. Total size of Virginia’s rivers and streams was calculated to be approximately 50,357 miles. For the 2006 assessment, DEQ once again used the Assessment Database (ADB 2.1.2) that EPA has provided the states. This version is based on designating an overall assessment category for each waterbody or assessment unit. Each designated use that has associated monitoring data is evaluated and an overall assessment category is determined based on the results of the individual designated use results. As previously pointed out, Category 5 overrides all other categories in the overall assessment unit determination.

Additional geographical re-indexing and use of the National Hydrologic Database (NHD) has slightly decreased the actual number of stream miles within the state from previous reports. The stream mile delineation guidance has provided consistent guidelines for associating the mileage assessed, relative to a specific sampling station. This is especially important where there are no easily identifiable changes in watershed characteristics. In some cases, the stream miles associated with a sampling station have been conservatively reduced from previous assessment reports. In other cases, additional monitoring stations have been added in the watershed and may increase the size of some impaired segments depending on the additional data collected and assessed. The stream mile delineation found in this report are only reflective of the 2006 assessment period but follow closely with the monitoring efforts reported in previous reports.

The total size of estuarine waters was approximately 2,428 square miles after creating our own GIS coverage. Coverage of coastal shore miles remained at 120 linear shore miles. An increased effort to assess one or more designated uses in the 100+ most significant public lakes was accomplished. A total of 116,058 significant reservoir/lake acres were calculated to exist in Virginia. For the 2006 assessment, any lake or reservoir that had been included in the original

hydrologic dataset that was not considered to be significant and had never been assessed was removed from the dataset. Thus, a substantial reduction in total lake/reservoir acres is apparent. Table 3.1-5 summarizes the overall designated use assessments of Virginia's waters to determine the degree of use support for aquatic life, fish consumption, shellfish consumption (where applicable), swimming, public water supply (where applicable) and wildlife uses. Table 3.1-6 lists the causes for those waters resulting in less than full support of the Clean Water Act goals and state Water Quality Standards.

Impairment causes and/or sources can be a “major impact”, defined as that which causes a significant impairment to the waterbody, or moderate and minor impacts individually or in combination. Normally, a major impact would be from a sole source with a large pollutant(s) contribution. Moderate and/or minor impacts have a slight to moderate effect on the waters and may be from a single moderate contributor or a combination of several minor contributors. It is important to note that moderate and minor impacts can, under certain conditions, work in conjunction to cause a major impact.

As previously stated, the causes and sources of use impairment of Virginia's waters resulting in less than full support of Clean Water Act goals are summarized in Tables 3.1-6 and 3.1-7. It is apparent that urban runoff and agricultural nonpoint sources are primary contributors of use impairment and major impacts. It is also important to point out that natural conditions can have a major impact on water quality. Equally apparent, the primary pollutants causing use impairment are low dissolved oxygen from nutrient enrichment or natural stratification, pH problems associated with natural, low-flow, swamp waters, pathogen indicators and human health-related Polychlorinated Biphenyls (PCBs) found in fish tissue. The assessment of the probabilistic estuarine B-IBI (benthic) data during this reporting period has resulted in an increase in aquatic life impairment in estuarine waters. Additionally, assessment of the BEACH Program data collected by the Virginia Department of Health (VDH) has identified several public swimming areas of concern.

For 2006 assessment, a new pH standard associated with Class 7 “swamp waters” was adopted by the SWCB and became effective on February 12, 2004. Designated waters were assessed according to the new criteria in the 2006 assessment. Many of these swamp waters have been identified as naturally impaired, based on the previous pH criteria, but will likely meet the new standard for the 2006 reporting period. In these cases, the waters will be delisted if previously 303(d) listed for pH exceedences based on the old criteria. If the water doesn’t meet the new criteria, it will remain on the list.

Assessment Results

DEQ incorporated the Integrated Reporting guidance EPA developed in 2005 into the 2006 assessment. The assessment approach used in this report is similar to the 2004 assessment and is designed to integrate or combine the 305(b) overall assessment of Virginia’s waters and include those waters impaired and needing a TMDL (Total Maximum Daily Load) as per 303(d). The EPA 2006 Integrated Report guidance and Assessment Database (ADB 2.1.2) has 5 different categories, some with subcategories, in which every segment or “assessment unit” (AU) will be placed. The EPA Integrated Report guidance allows the states to further sub-divide the federal Categories in order to address state programmatic needs. Virginia created several additional subcategories in order to facilitate tracking. Tables, 3.1-2, 3.1-3, and 3.1-4 show the assessment results by waterbody type using all assessment categories and subcategories applicable for Virginia’s 2006 Integrated Report.

Additional information regarding assessment methodologies and subcategories can be found in Chapter 2.2 of this report and/or the 2006 Assessment Guidance Manual found on the DEQ water website at www.deq.virginia.gov/wqa.

Table 3.1-2 Assessment Results for Rivers

Degree of Use Support	Water Type	Total Miles *(Rounded to the Nearest Whole Number)*	(%)
Fully Support All Designated Uses **(EPA Category 1)**	River (mi.)	59	0.1%
Virginia Subcategory 1A		0	
Fully Support Some Uses but Insufficient Data to Assess All Uses **(EPA Category 2)**	River (mi)	5,239	10.4%
Virginia Subcategory 2A		3,495	
Virginia Subcategory 2B		1,725	
Virginia Subcategory 2C		19	
Insufficient Data to Determine if any Uses are Being Met **(EPA Category 3)**	River (mi)	36,075	71.7%
Virginia Subcategory 3A		35,102	
Virginia Subcategory 3B		501	
Virginia Subcategory 3C		218	
Virginia Subcategory 3D		254	
Waters are Impaired or threatened but do not Need a TMDL **(EPA Category 4)**	River (mi)	1,961	3.9%
EPA Subcategory 4A		1,589	
EPA Subcategory 4B		0	
EPA Subcategory 4C		372	
Waters are Impaired or Threatened and Need a TMDL **(EPA Category 5)**	River (mi.)	7,023	13.9%
Virginia Subcategory 5A		6,254	
Virginia Subcategory 5B		0	
Virginia Subcategory 5C		527	
Virginia Subcategory 5D		242	
Virginia Subcategory 5E		0	
Virginia Subcategory 5F		0	
Total Size	River (mi)	50,357	100%

Table 3.1-3 Assessment Results for Significant Lakes/Reservoirs

Degree of Use Support	Water Type	Total Acres *(Rounded to the Nearest Whole Number)*	(%)
Fully Support All Designated Uses **(EPA Category 1)**	Lakes (acres)	0	0%
Virginia Subcategory 1A		0	
Fully Support Some Uses but Insufficient Data to Assess All Uses **(EPA Category 2)**	Lakes (acres)	3,271	2.8%
Virginia Subcategory 2A		2,390	
Virginia Subcategory 2B		881	
Virginia Subcategory 2C		0	
Insufficient Data to Determine if any Uses are Being Met **(EPA Category 3)**	Lakes (acres)	3,579	3.1%
Virginia Subcategory 3A		3,551	
Virginia Subcategory 3B		28	
Virginia Subcategory 3C		0	
Virginia Subcategory 3D		0	
Waters are Impaired but do not Need a TMDL **(EPA Category 4)**	Lakes (acres)	17,249	14.9%
EPA Subcategory 4A		0	
EPA Subcategory 4B		0	
EPA Subcategory 4C		17,249	
Waters are Impaired and Need a TMDL **(EPA Category 5)**	Lakes (acres)	91,959	79.2%
Virginia Subcategory 5A		88,387	
Virginia Subcategory 5B		0	
Virginia Subcategory 5C		2,850	
Virginia Subcategory 5D		722	
Virginia Subcategory 5E		0	
Virginia Subcategory 5F		0	
Total Size	Lakes (acres)	116,058	100%

Table 3.1-4 Assessment Results for Estuarine Waters

Degree of Use Support	Water Type	Total Square Miles *(Rounded to the Nearest Whole Number)*	(%)
Fully Support All Designated Uses **(EPA Category 1)**	Estuary (sq. mi.)	1	0%
Virginia Subcategory 1A		0	
Fully Support Some Uses but Insufficient Data to Assess All Uses **(EPA Category 2)**	Estuary (sq. mi.)	169	7.0%
Virginia Subcategory 2A		146	
Virginia Subcategory 2B		23	
Virginia Subcategory 2C		0	
Insufficient Data to Determine if any Uses are Being Met **(EPA Category 3)**	Estuary (sq. mi.)	44	1.8%
Virginia Subcategory 3A		43	
Virginia Subcategory 3B		1	
Virginia Subcategory 3C		0	
Virginia Subcategory 3D		0	
Waters are Impaired but do not Need a TMDL **(EPA Category 4)**	Estuary (sq. mi.)	0	0%
EPA Subcategory 4A		0	
EPA Subcategory 4B		0	
EPA Subcategory 4C		0	
Waters are Impaired and Need a TMDL **(EPA Category 5)**	Estuary (sq. mi.)	2,216	91.3%
Virginia Subcategory 5A		2,210	
Virginia Subcategory 5B		0	
Virginia Subcategory 5C		0	
Virginia Subcategory 5D		5	
Virginia Subcategory 5E		0	
Virginia Subcategory 5F		0	
Total Size	Estuary (sq. mi.)	2,428	100%

TABLE 3.1- 5 OVERALL INDIVIDUAL USE SUPPORT SUMMARY TABLE

Size: ***All Sizes Rounded to Nearest Whole Number***

Rivers – 50,357 miles
Lakes – 116,058 acres
Estuaries – 2,428 sq.miles

Designated Use	Water Body Type	Fully Supporting	Total Impaired	Naturally Impaired	Insufficient Information	Not Assessed	Size Assessed
Aquatic Life	River (mi)	9,399	3,426	1,514	1,185	36,346	12,825
	Lakes (acres)	15,325	93,376	65,443	54	7,304	108,701
	Estuary (sq. mi.)	45	2,214	3	25	144	2,259
Fishing	River (mi)	2,271	1,251	0	96	46,737	3,522
	Lakes (acres)	18,573	74,021	0	28	23,436	95,594
	Estuary (sq. mi.)	36	2,118	0	0	275	2,154
Shellfishing	River (mi)	NA	NA	NA	NA	NA	NA
	Lakes (acres)	NA	NA	NA	NA	NA	NA
	Estuary (sq. mi.)	1,981	89	0	0	12	2,070
Swimming	River (mi)	3,300	6,704	2	835	39,517	10,004
	Lakes (acres)	97,174	4,848	0	1,450	12,587	102,022
	Estuary (sq. mi.)	552	82	0	7	1,787	634
Public Water Supply	River (mi)	1,437	2		5	8,005	1,439
	Lakes (acres)	73,793	0	0	0	15,848	73,793
	Estuary (sq. mi.)	7	0	0	0	0	7
Wildlife	River (mi)	10,795	52	32	140	39,369	10,847
	Lakes (acres)	103,467	548	0	0	12,044	104,015
	Estuary (sq. mi.)	500	86	86	23	1,818	586

Chesapeake Bay Designated Uses

Open Water Aquatic Life Use	Estuary (sq. mi.)	1	1,680	0	531	0	1,681
Deep Water Aquatic Life Use	Estuary (sq. mi.)	0	466	0	0	0	466
Deep Channel Aquatic Life Use	Estuary (sq. mi.)	0	147	0	0	0	147
Submerged Vegetation	Estuary (sq. mi.)	60	61	0	0	0	121
Migratory Spawning	Estuary (sq. mi.)	0	0	0	0	351	0

TABLE 3.1-6 WATERS IMPAIRED BY VARIOUS CAUSE CATEGORIES

Pollutant	*Type*	**Impaired** *(Rounded to Nearest Whole Number)*
Aldrin	River (mi) Lakes (acres) Estuary (mi^2)	7 0 0
Ammonia	River (mi) Lakes (acres) Estuary (mi^2)	1 0 0
Arsenic	River (mi) Lakes (acres) Estuary (mi^2)	3 0 0
Aquatic Plants (Macrophytes)	River (mi) Lakes (acres) Estuary (mi^2)	1 0 2,148
Benthic Assessment	River (mi) Lakes (acres) Estuary (mi^2)	1,198 0 528
Benzo(k)fluoranthene	River (mi) Lakes (acres) Estuary (mi^2)	35 0 0
Chlordane	River (mi) Lakes (acres) Estuary (mi^2)	2 0 0
Chloride	River (mi) Lakes (acres) Estuary (mi^2)	50 0 86
Copper	River (mi) Lakes (acres) Estuary (mi^2)	6 548 0
DDE/DDT	River (mi) Lakes (acres) Estuary (mi^2)	19 0 0
Dissolved Oxygen Saturation	River (mi) Lakes (acres) Estuary (mi^2)	0 1,699 0
Enterococcus Pathogen Indicators	River (mi) Lakes (acres) Estuary (mi^2)	0 0 44
Escherichia coli Pathogen Indicators	River (mi) Lakes (acres) Estuary (mi^2)	3,854 4,848 27
Fecal Coliform Pathogen Indicators	River (mi) Lakes (acres) Estuary (mi^2)	3,988 1,361 112
Heptachlor Epoxide	River (mi) Lakes (acres) Estuary (mi^2)	0 0 14
Iron	River (mi) Lakes (acres) Estuary (mi^2)	7 0 0
Mercury	River (mi) Lakes (acres) Estuary (mi^2)	0 28 0
Mercury in Fish Tissue	River (mi) Lakes (acres) Estuary (mi^2)	374 3,401 8

Pollutant	*Type*	**Impaired** *(Rounded to Nearest Whole Number)*
Nitrates	River (mi) Lakes (acres) Estuary (mi^2)	2 0 0
Dissolved Oxygen	River (mi) Lakes (acres) Estuary (mi^2)	1,250 91,362 1,909
pH	River (mi) Lakes (acres) Estuary (mi^2)	1,201 8,409 10
PCB in Fish Tissue	River (mi) Lakes (acres) Estuary (mi^2)	970 70,697 2,114
PCB's	River (mi) Lakes (acres) Estuary (mi^2)	0 28 0
Estuarine Sediment Bioassay	River (mi) Lakes (acres) Estuary (mi^2)	NA NA 2
Temperature	River (mi) Lakes (acres) Estuary (mi^2)	302 97 0
Tributyltin (TBT)	River (mi) Lakes (acres) Estuary (mi^2)	0 0 11
Zinc	River (mi) Lakes (acres) Estuary (mi^2)	4 0 0

TABLE 3.1–7 WATERS IMPAIRED BY VARIOUS SOURCE CATEGORIES

Source of Impairment	*Type*	**Impaired** *(Rounded to Nearest Whole Number)*
Acid Mine Drainage	River (mi) Lakes (acres) Estuary (mi^2)	33 0 0
Agriculture	River (mi) Lakes (acres) Estuary (mi^2)	266 0 2,207
Animal Feeding Operations	River (mi) Lakes (acres) Estuary (mi^2)	247 0 0
Atmospheric Deposition-Acidity	River (mi) Lakes (acres) Estuary (mi^2)	230 343 0
Atmospheric Deposition-Nitrogen	River (mi) Lakes (acres) Estuary (mi^2)	1 0 2,207
Atmospheric Deposition-Toxics	River (mi) Lakes (acres) Estuary (mi^2)	20 0 5
Changes in Ordinary Stratification and Bottom Water Hypoxia/Anoxia	River (mi) Lakes (acres) Estuary (mi^2)	0 9,527 20
Channelization	River (mi) Lakes (acres) Estuary (mi^2)	20 0 0
Clean Sediments	River (mi) Lakes (acres) Estuary (mi^2)	17 0 2,148
Coal Mining	River (mi) Lakes (acres) Estuary (mi^2)	28 0 0
Combined Sewer Overflows	River (mi) Lakes (acres) Estuary (mi^2)	35 0 9
Commercial Districts (Industrial/Office Parks)	River (mi) Lakes (acres) Estuary (mi^2)	12 0 0
Contaminated Sediments	River (mi) Lakes (acres) Estuary (mi^2)	171 0 16
Crop Production	River (mi) Lakes (acres) Estuary (mi^2)	27 0 0
Dam or Impoundment	River (mi) Lakes (acres) Estuary (mi^2)	48 1,834 0
Discharges from Municipal Storm Sewers	River (mi) Lakes (acres) Estuary (mi^2)	140 0 21
Drought-related Impacts	River (mi) Lakes (acres) Estuary (mi^2)	47 0 0

Source of Impairment	*Type*	**Impaired** *(Rounded to Nearest Whole Number)*
Grazing in Riparian or Shoreline Zones	River (mi) Lakes (acres) Estuary (mi^2)	388 0 0
Illegal Dumps or other Inappropriate Waste Disposal	River (mi) Lakes (acres) Estuary (mi^2)	1 0 0
Illicit Hookups/Connections to Storm Sewers	River (mi) Lakes (acres) Estuary (mi^2)	13 0 0
Impacts from Abandoned Mine Lands	River (mi) Lakes (acres) Estuary (mi^2)	24 0 0
Impacts from Land Application of Wastes	River (mi) Lakes (acres) Estuary (mi^2)	87 0 0
Impervious Surface/Parking Lot Runoff	River (mi) Lakes (acres) Estuary (mi^2)	12 0 0
Industrial Point Source Discharge	River (mi) Lakes (acres) Estuary (mi^2)	182 0 2,207
Inappropriate Waste Disposal	River (mi) Lakes (acres) Estuary (mi^2)	10 0 0
Internal Nutrient Cycling	River (mi) Lakes (acres) Estuary (mi^2)	1 0 2,207
Landfills	River (mi) Lakes (acres) Estuary (mi^2)	4 0 0
Leaking Underground Storage Tanks	River (mi) Lakes (acres) Estuary (mi^2)	2 0 0
Livestock Grazing or Feeding Operations	River (mi) Lakes (acres) Estuary (mi^2)	1,508 2,544 0
Loss of Riparian Habitat	River (mi) Lakes (acres) Estuary (mi^2)	93 0 2,207
Managed Pasture Grazing	River (mi) Lakes (acres) Estuary (mi^2)	7 0 0
Manure Runoff	River (mi) Lakes (acres) Estuary (mi^2)	42 0 0
Mine Tailings	River (mi) Lakes (acres) Estuary (mi^2)	6 0 0
Urbanized High Density Area	River (mi) Lakes (acres) Estuary (mi^2)	483 976 7

Source of Impairment	*Type*	**Impaired** *(Rounded to Nearest Whole Number)*
Municipal Point Source Discharges	River (mi) Lakes (acres) Estuary (mi^2)	150 0 2,207
Natural Conditions – Water Quality Use Attainability	River (mi) Lakes (acres) Estuary (mi^2)	1,645 72,380 90
Natural Sources	River (mi) Lakes (acres) Estuary (mi^2)	4 0 8
Non-Point Sources	River (mi) Lakes (acres) Estuary (mi^2)	1,651 106 24
On-site Treatment Systems	River (mi) Lakes (acres) Estuary (mi^2)	942 2,466 8
Other Shipping releases (Wastes and Detritus)	River (mi) Lakes (acres) Estuary (mi^2)	0 0 11
Package Plant or other Permitted Small Flow Discharges	River (mi) Lakes (acres) Estuary (mi^2)	3 0 0
Releases from Waste Sites or Dumps	River (mi) Lakes (acres) Estuary (mi^2)	4 0 0
Residential Districts	River (mi) Lakes (acres) Estuary (mi^2)	8 0 0
Post Development Erosion	River (mi) Lakes (acres) Estuary (mi^2)	23 0 0
Rangeland Grazing	River (mi) Lakes (acres) Estuary (mi^2)	11 0 0
Runoff from Forest/Grassland	River (mi) Lakes (acres) Estuary (mi^2)	147 0 0
Rural/Residential Area	River (mi) Lakes (acres) Estuary (mi^2)	286 0 0
Sanitary Sewer Overflows	River (mi) Lakes (acres) Estuary (mi^2)	89 428 0
Septage Disposal	River (mi) Lakes (acres) Estuary (mi^2)	51 0 0
Sewage Discharge in Unsewered	River (mi) Lakes (acres) Estuary (mi^2)	231 0 0
Sediment Resuspension	River (mi) Lakes (acres) Estuary (mi^2)	95 0 2148
	River (mi)	0

Source of Impairment	*Type*	**Impaired** *(Rounded to Nearest Whole Number)*
Ship Building, Repairs, Drydocking	Lakes (acres) Estuary (mi^2)	0 11
Silviculture/Land Clearing	River (mi) Lakes (acres) Estuary (mi^2)	34 0 0
Source Unknown	River (mi) Lakes (acres) Estuary (mi^2)	4,186 85,653 2,151
Sources Outside State Jurisdiction or Borders	River (mi) Lakes (acres) Estuary (mi^2)	1 0 2,207
Streambank Modification or Destabilization	River (mi) Lakes (acres) Estuary (mi^2)	69 0 0
Surface Mining	River (mi) Lakes (acres) Estuary (mi^2)	60 0 0
Unpermitted Discharge (Domestic Wastes)	River (mi) Lakes (acres) Estuary (mi^2)	5 0 0
Unspecified Urban/Stormwater Waste	River (mi) Lakes (acres) Estuary (mi^2)	1,150 2,544 0
Upstream Source	River (mi) Lakes (acres) Estuary (mi^2)	21 0 0
Wastes from Pets	River (mi) Lakes (acres) Estuary (mi^2)	866 235 0
Waterfowl	River (mi) Lakes (acres) Estuary (mi^2)	223 0 0
Wet Weather Discharges Nonpoint Sources	River (mi) Lakes (acres) Estuary (mi^2)	0 0 322
Wet Weather Discharges Point Sources	River (mi) Lakes (acres) Estuary (mi^2)	1 0 2,207
Wildlife other than Waterfowl	River (mi) Lakes (acres) Estuary (mi^2)	2,794 2,544 0